

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
BUREAU OF AIR, PERMIT SECTION
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PROJECT SUMMARY
FOR A CONSTRUCTION PERMIT APPLICATION
FROM CITY OF SULLIVAN,
FOR THREE NEW ENGINE GENERATORS
AT SULLIVAN POWER PLANT, AT SULLIVAN, ILLINOIS

Site Identification No.: 139030AAE
Application No.: 10070047
Date Received: July 22, 2010

Schedule

Public Comment Period Begins: December 29, 2010
Public Comment Period Closes: January 28, 2011

Illinois EPA Contacts

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I. INTRODUCTION

The City of Sullivan (the City) has proposed to construct three new diesel engine generators at its municipal power plant. The construction of the engine generators requires a permit from the Illinois EPA because of its associated air emissions.

It is the Illinois EPA's preliminary determination that the application meets all applicable state and federal air pollution control requirements. The Illinois EPA is therefore proposing to issue a construction permit for the project.

Comments are requested on this proposed action by the Illinois EPA and the proposed conditions on the draft permit.

II. PROJECT DESCRIPTION

The three new engines would operate to meet electric loads and as needed to assure availability for such purpose. Historically, the existing engines at this facility have been operated sparingly, primarily for emergency purposes as electricity is routinely available from commercial power plants. The new engines will be with a nominal capacity of 2,250 KWe each at the City's existing power generating facility located at 517 West Water Street.

III. PROJECT EMISSIONS

Emissions of carbon monoxide (CO), nitrogen oxide (NO_x), particulate matter (PM), sulfur dioxide (SO₂) and volatile organic material (VOM) would result from the combustion of fuel in the engines.

The principal air contaminants emitted from the proposed engines would be NO_x and CO. NO_x can be formed thermally by combination of oxygen and nitrogen in the air at the temperatures at which fuel is burned. Thermal NO_x is formed during the operation of all common high temperature combustion processes including engines. NO_x can also be formed from the combination of any nitrogen in the fuel with oxygen. Factors affecting NO_x formation from an engine include design, ambient conditions, engine load, and fuel types.

CO is formed by the incomplete combustion of fuel. CO is associated with most combustion processes and is found in measurable amounts in engine exhaust. VOM and PM emissions are also emitted as a result of incomplete combustion of fuel. SO₂ is found only in trace amounts from combustion of fuel oil containing ultra low sulfur content. CO and VOM emissions are controlled by providing adequate fuel residence time and high temperature in combustion zone to ensure complete combustion. PM emissions are controlled by proper combustion control and firing fuel oil which has negligible ash content.

The annual emissions from the engines would be limited to 39.0 tons of NO_x, 58.8 tons of CO, 2.6 tons of PM, 7.1 tons of VOM, and 0.4 ton of

SO₂, consistent with information in the application submitted by the City. These limits for CO, VOM and PM are based on the applicable NSPS standards at its maximum rated capacity. The annual limit for NO_x is based on manufacturer's emission factor for NO_x, in g/kW-hour, which is lower than the NSPS standard. Actual annual emissions of the engines would be less than these limits to the extent that the actual utilization of the engines will be much less than the assumed operations for the purposes of limiting potential to emit.

This project is not considered a major project under the federal rules for Prevention of Significant Deterioration of Air Quality (PSD), 40 CFR 52.21. This is because the potential emissions from the proposed engines, as addressed by the draft permit, would be less than the significant emission increase thresholds for PSD, i.e., NO_x, SO₂ and VOM are limited to less than 40 tons/year; CO emissions are limited to less than 100 tons/year and PM emissions are limited to less than 15 tons/year.

IV. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with the Illinois Pollution Control Board's emission standards. The Board's emission standards represent the basic requirements for sources in Illinois. The proposed boiler will readily comply with the applicable state standards (35 Ill. Adm. Code: Subtitle B).

The engines are also subject to the federal New Source Performance Standards (NSPS), 40 CFR 60 Subpart IIII, for Stationary Compression Ignition Internal Combustion Engines. This standard addresses emissions from the engines based on model year of the engines, and maximum engine power output ratings. The Illinois EPA is administering NSPS in Illinois on behalf of the United States EPA under a delegation agreement. The project should readily comply with the standards as the City is purchasing engines that are certified by the manufacturer to be in compliance with applicable NSPS emission standards.

V. DRAFT PERMIT

The conditions of the draft permit for the project contain limitations and requirements for the engines to help assure that the project complies with applicable regulatory requirements.

The draft permit includes enforceable limits on emissions and operation for the engines to assure that project remains below the levels at which it would be considered major for PSD. In addition to limiting annual emissions, the permit also includes limits on short term emissions, a limitation on the capacity of the engines, and limitation on fuel consumption for the engines. The permit also generally requires that good air pollution control practice be used to minimize emissions.

The permit also establishes appropriate compliance procedures for the engines, including requirements for emission testing up on request, recordkeeping, and reporting.

These measures are being imposed to assure that the emissions of the engines are accurately tracked to confirm compliance with the applicable short-term standards and annual emission limits.

VI. **REQUEST FOR COMMENTS**

It is the Illinois EPA's preliminary determination that the application meets all applicable state and federal air pollution control requirements. The Illinois EPA is therefore proposing to issue a construction permit for the project.

Comments are requested on this proposed action by the Illinois EPA and the proposed conditions on the draft permit. If substantial public interest is shown in this matter, the Illinois EPA will consider holding a public hearing in accordance with 35 Ill. Adm. Code Part 166.

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